

# Medical Practice Question

EDITOR'S NOTE: From time to time medical practice questions from organizations with a legitimate interest in the information are referred to the Scientific Board by the Quality Care Review Commission of the California Medical Association. The opinions offered are based on training, experience and literature reviewed by specialists. These opinions are, however, informational only and should not be interpreted as directives, instructions or policy statements.

## Early Detection of Lung Cancer

### QUESTIONS:

*In light of available methods for the diagnosis and treatment of lung cancer,*

1. *Is there any evidence that early diagnosis of this disease can significantly improve patient survival? If yes, what diagnostic and treatment modalities are available?*

2. *Is there any evidence that early detection of lung cancer's premalignant precursors can significantly improve patient survival? If yes, what screening, diagnostic and treatment modalities are available?*

### OPINION:

1. In the opinion of the Scientific Advisory Panels on Chest Diseases, General and Family Practice, General Surgery, Internal Medicine, Occupational Medicine, Pathology, Preventive Medicine and Public Health and Radiology, there is some evidence that certain types of lung cancer can be detected at an earlier stage than previously possible, but it has not been shown that earlier detection significantly decreases mortality from the disease. In the context of lung cancer, early diagnosis must refer to asymptomatic disease detected by screening procedures. The only diagnostic methods of potential screening value at present are chest radiography and sputum cytology. Chest radiography is acknowledged to be more sensitive than sputum cytology, but the latter, a microscopic examination of cells obtained from deep cough sputum samples, is highly specific and is more effective in detecting early squamous cell carcinoma of the lung. It has been shown that serial cytologic examinations increase resectability and average survival after surgical resection, but it has not been proved that it actually increases the length of survival.

Additional methods of value in the diagnosis of lung cancer are the history and physical examination, fiberoptic bronchoscopy, biopsy of accessible lesions (including mediastinoscopy), thoracotomy, computed tomography and magnetic resonance imaging. Sputum cytology used in conjunction with fiberoptic bronchoscopy and hematoporphyrin, a fluorescent dye, to locate very small lung tumors is considered investigational. Treatment methods of value include surgery, radiation therapy and chemotherapy, alone or in combination. Recently developed procedures such as photodynamic laser therapy and immunologic therapy are still under investigation.

The most rigorous evaluation of early detection of lung cancer is currently in progress. Sponsored by the National Cancer Institute, this project consists of three long-term, randomized, controlled clinical trials comparing radiologic and cytologic screening, alone and in combination, for the early detection of lung cancer.

Collectively, these studies (the Johns Hopkins Lung Project, the Mayo Lung Project and the Memorial Sloan-Kettering National Lung Project) recruited approximately 30,000 men, all heavy smokers 45 years of age or older.

The results of the initial screening suggest that early detection using chest radiography with sputum cytology improves five-year survival when compared with data derived from the general population. The advisory panels, however, support the conclusion of the Early Lung Cancer Detection Cooperative Study, published in 1984, which states that "these data do not yet indicate whether long survival in prevalence cases of lung cancer means a decreased mortality from the disease or simply reflects one or more of the artifacts of screening. Conclusions with regard to the impact of screening on mortality must await the outcome of long-term follow-up and incidence data now being collected in these controlled trials." Until current screening techniques are shown to reduce mortality and to be cost-effective, screening programs should be conducted only under research protocol and limited to such high-risk groups as heavy smokers and those exposed to occupational hazards known to be associated with respiratory cancer.

2. Insufficient data exist to definitively show that detection of these premalignant precursors would improve patient survival, even though it appeals to logic. Since early detection of lung cancer would seem to be a prerequisite for improved survival, randomized clinical trials on the experimental diagnostic and treatment methods previously mentioned are encouraged.

While the potential benefit of early detection programs remains to be seen, prevention of lung cancer continues to be a high priority. Intensified efforts in smoking cessation, antismoking programs and control of occupational lung cancer agents should be supported and may ultimately prove more cost-effective than early detection screening programs. At the same time, research into improved treatment methods such as photodynamic laser therapy, newer chemotherapeutic drugs and immunologic methods for regression in cellular atypia and dysplasia should be encouraged. Earlier diagnosis will be of limited value until some therapeutic technique allows definitive therapy of the lesion detected at its earliest stage.